

What Is Claimed Is:

1           1. A rollover control system for an automotive  
2 vehicle comprising:

3           an active suspension having independently  
4 adjustable unloading side and a loading side;

5           a rollover sensor generating a rollover signal for  
6 detecting an imminent rollover of the vehicle; and

7           a controller coupled to said rollover sensor for  
8 controlling the active suspension to generate a restoring  
9 torque in response to the rollover signal.

1           2. A rollover control system as recited in claim  
2 1 wherein said controller controls the loading side to a  
3 loaded condition and controls the unloading side to an  
4 unloaded condition to provide the restoring torque.

1           3. A rollover control system as recited in claim  
2 1 wherein said controller controls the loading side to a  
3 loaded condition and simultaneously controls the unloading  
4 side to an unloaded condition to provide the restoring  
5 torque.

1           4. A rollover control system as recited in claim  
2 1 wherein said rollover sensor comprises a speed sensor  
3 generating a first signal corresponding to wheel speed of  
4 the vehicle.

1           5. A rollover control system as recited in claim  
2 1 wherein said rollover sensor is selected from the group of  
3 a speed sensor, a lateral acceleration sensor, a roll rate  
4 sensor, a yaw rate sensor and a longitudinal acceleration  
5 sensor.

1               6. A rollover control system as recited in claim  
2 1 wherein said rollover sensor is selected from the group of  
3 a speed sensor, a lateral acceleration sensor, a roll rate  
4 sensor, a yaw rate sensor and a steering wheel angle sensor.

1               7. A rollover control system as recited in claim  
2 1 further comprising a sensor selected from the group of a  
3 steering angle sensor, acceleration sensor and a pitch rate  
4 sensor.

1               8. A rollover control system as recited in claim  
2 1 wherein said controller determines vehicle speed at a  
3 center of gravity of the vehicle in response to said  
4 steering angle and said steering sensor.

1               9. A rollover control system as recited in claim  
2 1 further comprising a brake controller coupled to said  
3 controller, said brake controller controlling front brake  
4 force and rear brake force in response to said rollover  
5 signal.

1               10. A rollover control system as recited in claim  
2 9 wherein said controller changes the restoring torque by  
3 changing the steering angle factor in combination with said  
4 brake force distribution.

1               11. A rollover control system as recited in claim  
2 1 wherein said controller changes the restoring torque by  
3 controlling the steered wheels.

1               12. A method of controlling rollover stability of  
2 a vehicle having an active suspension having a first side  
3 suspension and a second side suspension comprising the steps  
4 of:

5 sensing imminent rollover of the vehicle in  
6 response to a rollover signal;

generating a restoring torque in response to the  
rollover signal by controlling the active suspension.

1                   13. A method as recited in claim 12 wherein the  
2 step of generating a restoring torque comprises unloading  
3 the first side suspension.

1                   14. A method as recited in claim 12 wherein the  
2 step of generating a restoring torque comprises loading the  
3 second side suspension corresponding to the loading side  
4 suspension.

1                   15. A method as recited in claim 12 wherein the  
2 step of generating a restoring torque comprises generating a  
3 restoring torque in response to the rollover signal by  
4 controlling the active suspension and a brake force  
5 distribution.

1                   16. A method as recited in claim 12 wherein the  
2 step of generating a restoring torque comprises generating a  
3 restoring torque in response to the rollover signal by  
4 controlling the active suspension and a steering angle.

1                   17. A method as recited in claim 12 wherein the  
2 step of generating a restoring torque comprises  
3 simultaneously unloading the first side suspension and  
4 loading the second side suspension corresponding to the  
5 loading side suspension.

1                   18. A method of controlling rollover stability of  
2 a vehicle having a first side suspension and a second side  
3 suspension comprising the steps of:

4                   sensing imminent rollover of the vehicle in  
5 response to a rollover signal;  
6                   determining a loading side and a unloading of the  
7 vehicle;  
8                   unloading the first side suspension corresponding  
9 to the unloading side suspension;  
10                  loading the second side suspension corresponding  
11 to the loading side suspension;  
12                  generating a restoring torque in response to the  
13 steps of unloading and loading.

1                   19. A method as recited in claim 18 wherein prior  
2 to the step of loading and unloading generating the  
3 restoring torque by changing a steering angle of the  
4 vehicle.

1                   20. A method as recited in claim 18 wherein prior  
2 to the step of loading and unloading generating the  
3 restoring torque by changing a brake force distribution.

1                   21. A method as recited in claim 18 wherein prior  
2 to the step of loading and unloading generating the  
3 restoring torque by changing the steering angle factor in  
4 combination with said brake force distribution.

1                   22. A method as recited in claim 18 wherein the  
2 steps of loading and unloading are performed simultaneously.